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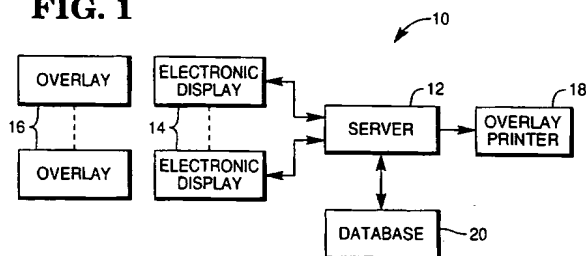1700 South Patterson Boulevard
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(54) **System and method for printing overlays for electronic displays devices.**

(57) The invention relates to a system and method for printing overlays (16) for electronic display devices (14) which prints overlays (16) when an item is associated with an electronic shelf display (14). A database contains identification information for the products associated with the electronic shelf displays (14) and identification information for the electronic shelf displays (14). A computer terminal (12,32,40) retrieves the product information associated with the electronic shelf displays (14) from the database (20,38,44) and sends the product information to the printer (18,42) in a queue. A printer (18,42) prints the overlays (16). In a first embodiment, the printing occurs in a store. In a second embodiment, the printing occurs outside the store, preferably by the vendor of the electronic shelf displays (14). For this purpose, a computer terminal (13,32) at the store downloads product information to another computer terminal (40) located with the vendor. The vendor takes care of printing the overlays (16) and attaching the overlays (16) to the electronic shelf displays (14) in order to reduce the store labor required to install the system.

FIG. 1

EP 0 676 738 A2

The present invention relates to electronic displays such as electronic shelf labels, and more specifically to a system and method for printing overlays for electronic display devices.

Electronic shelf label systems typically include a plurality of electronic displays for each item in a store. The electronic displays are coupled to a central server from where prices for all of the displays can be changed.

In order to reduce the cost of such systems, only a limited amount of information, including price information, is displayed electronically. Item descriptions and product codes are not likely to change. Therefore, such information is typically displayed through signs or overlays attached to the electronic shelf label.

Known methods for labeling electronic shelf displays are labor-intensive and occur one product at a time. A store employee obtains the overlay information, or new overlay information for an existing overlay, for the one product. After the information is collected, it is printed to form an overlay. The store employee must then return to attach the overlay to its respective electronic shelf label.

It is an object of the invention to provide a system and method for facilitating the printing of overlays for attachment to electronic shelf displays.

According to a first aspect of the present invention there is provided a system for printing a plurality of overlays containing item information for attachment to new electronic shelf displays which are located at a place where the items are sold, the system being characterized by a database containing the information regarding the items and identification information identifying particular electronic shelf displays; a printer for printing the overlays; and a computer terminal for matching selected item information to selected identification information, and for sending the matched item information to the printer for printing.

According to a second aspect of the present invention there is provided a method of printing a plurality of overlays for a plurality of electronic shelf displays, the method being characterized by the steps of: a) obtaining item information relates to items for display and information identifying each electronic shelf display; b) organizing said item information into overlays utilizing a computer terminal; c) executing an overlay printing application which creates an overlay print queue corresponding to selected shelf displays as identified by said identification information; and d) causing the overlay printing application to print the overlays in the print queue.

It is a feature of the present invention that new overlays are printed when an item is associated with an electronic shelf display.

In a first embodiment, the system is located in a store. The store performs the tasks of printing the overlays and attaching them to their respective electronic shelf displays.

In a second embodiment, the printing and attaching steps occur outside the store, preferably by the vendor of the electronic shelf displays. For this purpose, a computer terminal at the store downloads product information to another computer terminal located with the vendor. The vendor takes care of printing the overlays and attaching the overlays to the electronic shelf displays in order to reduce the store labor required to install the system.

An embodiment of the present invention will now be described, by way of example, with reference to the accompanying drawings in which:-

Fig. 1 is a block diagram of a first embodiment of the system of the present invention;

Fig. 2 is a block diagram of a second embodiment of the system of the present invention;

Fig. 3 is a flow diagram illustrating the operation of the first embodiment of Fig. 1; and

Fig. 4 is a flow diagram illustrating the operation of the second embodiment of Fig. 2.

Referring now to Fig. 1, electronic shelf label system 10 includes server 12, electronic shelf displays 14, overlays 16, overlay printer 18, and database 20.

Server 12 controls operation of system 10. Price and other information displayed at each of electronic shelf displays 14 may be changed by server 12. Server 12 also controls printing of overlays 16 which are mounted on electronic shelf displays 14.

Electronic shelf displays 14 preferably display price information for adjacent merchandise items, although additional information may also be displayed. Electronic shelf displays 14 may be coupled to server 12 through wire cables or through wireless transceivers mounted in both electronic shelf displays 14 and server 12.

Overlays 16 are mounted on electronic displays 14 and include printed information such as item descriptions, item bar code labels, item identification numbers, and promotional information. Overlays 16 may be made of paper or plastic, and may be attached using adhesives or special fasteners.

Overlay printer 18 prints overlays 16. Many overlays may be printed at the same time when standard letter-size adhesive paper is used.

Database 20 organizes product information and electronic shelf displays identification numbers.

Turning now to Fig. 2, an alternative embodiment 30 of the system of the present invention is shown. Alternative embodiment 30 includes server 32, electronic shelf displays 34, overlays 36, database 38, factory server 40, factory overlay printer 42, and factory database 44.

Server 32 controls operation of the in-store portion of system 30. Prices displayed at each of electronic shelf displays 34 may be changed by server 32.

Electronic shelf displays 34 preferably display price information for adjacent merchandise items, although additional information may also be displayed.

Electronic shelf displays 34 may be coupled to server 32 through wire cables or through wireless transceivers mounted in both electronic shelf displays 34 and server 32.

Overlays 36 are mounted on electronic displays 34 and include printed information such as item descriptions, item bar code labels, item identification numbers, and promotional information.

Database 38 organizes product information.

Factory server 40 matches product information downloaded from server 32 with electronic shelf display identification numbers, and controls printing of overlays 36. Here, the term factory refers to the electronic shelf display factory. Thus, the matching process and labeling process require less store labor than previous methods.

Factory overlay printer 42 prints overlays 36.

: Factory database 44 organizes product information and electronic shelf display identification numbers.

Display labeler 46 attaches overlays 36 to electronic shelf displays 34. Overlays 36 are preferably printed on adhesive paper in serial fashion so that each overlay may be more easily severed from the rest and separated from its non-adhesive backing by display labeler 46. After the adhesive backing has been removed, display labeler 46 aligns the overlay 36 with the electronic shelf display 34.

Turning now to Fig. 3, the overlay printing method associated with Fig. 1 begins with START 50.

In step 52, server 12 obtains a product identification code for each merchandise item from inventory database 20.

In step 54, server 12 obtains identification numbers for each electronic display. These identification numbers and the corresponding locations of electronic shelf displays 14 may also be stored in a database.

In step 56, server 12 matches each product identification code to a unique electronic shelf display 14 and stores the association in its database.

In step 58, server 12 determines whether there are any remaining product identification numbers to be matched with electronic shelf displays 14. If so, then the method loops back to step 56 until there are no product identification numbers left.

If there are no remaining product identification numbers to be matched with electronic shelf displays 14, the method proceeds to step 60, in which server 12 initializes electronic shelf displays 14 with current information such as item price, unit price, location code, stock count, facings, and unique identifiers, as appropriate.

In step 62, server 12 organizes the product information for printing and executes an overlay printing application which creates an overlay print queue including each of overlays 16. The print queue may be created manually or automatically, depending upon the needs of the retail establishment.

In step 64, server 12 notifies the overlay print application to begin printing the overlays in the print queue by overlay printer 18. This step may be performed automatically or manually with operator intervention.

In step 66, the method ends.

Turning now to Fig. 4, the overlay printing method associated with Fig. 2 begins with START 70.

In step 72, server 32 obtains a product identification code for each merchandise item from inventory database 38. If a merchandise item is new, its product identification number may be entered into the database at this time.

In step 74, server 32 downloads the product identification information to factory server 40.

In step 76, factory server 40 obtains identification numbers for each electronic display 34.

In step 78, factory server 40 matches each product identification code to a unique electronic shelf display 34 and stores the association in its database 44.

In step 80, factory server 40 determines whether there are any remaining product identification numbers to be matched with electronic shelf displays 34. If so, then the method loops back to step 78 until there are no product identification numbers left.

If there are no remaining product identification numbers to be matched with electronic shelf displays 34, the method proceeds to step 82, in which factory server 40 initializes electronic shelf displays 34 with current information such as item price, unit price, location code, stock count, facings, and unique identifiers, as appropriate.

In step 84, factory server 40 organizes the product information for printing and executes an overlay printing application which creates an overlay print queue including each of overlays 36. The print queue may be created manually or automatically, depending upon the needs of the factory process.

In step 86, factory server 40 notifies the overlay print application to begin printing the overlays in the print queue by factory overlay printer 42. This step may be performed automatically or manually with operator intervention.

In step 88, factory server 40 activates display labeler 46 which attaches overlays 36 to electronic shelf displays 34.

Advantageously, the second embodiment requires less store labor as the matching and labeling steps are performed at the electronic shelf display factory.

In step 90, the method ends.

Claims

1. A system for printing a plurality of overlays (16) containing item information for attachment to new electronic shelf displays (14) which are located at

a place where the items are sold, the system be-
ing characterized by a database (20,38,44) con-
taining the information regarding the items and
identification information identifying particular
electronic shelf displays (14); a printer (18,42) for
printing the overlays (16); and a computer termi-
nal (12,32,40) for matching selected item infor-
mation to selected identification information, and
for sending the matched item information to the
printer (18) for printing.

2. A system according to claim 1, characterized in
    that the system is located at a second place out-
    side the first place and wherein the system com-
    prises a second database (20,38), at the first
    place containing the item information, and a sec-
    ond server (32) at the first place, which down-
    loads the item information to the first server (40)
    for storage in the first database (44).

3. A system according to claim 2, characterized by
    a label machine at the second place for attaching
    the printed overlays (16) onto said electronic
    shelf displays (14).

4. A method of printing a plurality of overlays (16) for
    a plurality of electronic shelf displays (14), the
    method being characterized by the steps of: a)
    obtaining item information relates to items for dis-
    play and information identifying each electronic
    shelf display (14); b) organizing said item infor-
    mation into overlays (16) utilizing a computer ter-
    minal (12,32,40); c) executing an overlay printing
    application which creates an overlay print queue
    corresponding to selected shelf displays (14) as
    identified by said identification information; and
    d) causing the overlay printing application to print
    the overlays (16) in the print queue.

5. A method according to claim 4, wherein step (a)
    comprises the substeps of: (a-1) obtaining said
    item information from a database (20,38); (a-2)
    obtaining said display information from said da-
    tabase (20,38); (a-3) matching the item informa-
    tion (14); and (a-4) storing matches produced by
    step (a-3) in said database (44).

6. A method according to claim 5 or claim 6, char-
    acterized by the step of: (e) initializing said elec-
    tronic shelf displays (14) with said item informa-
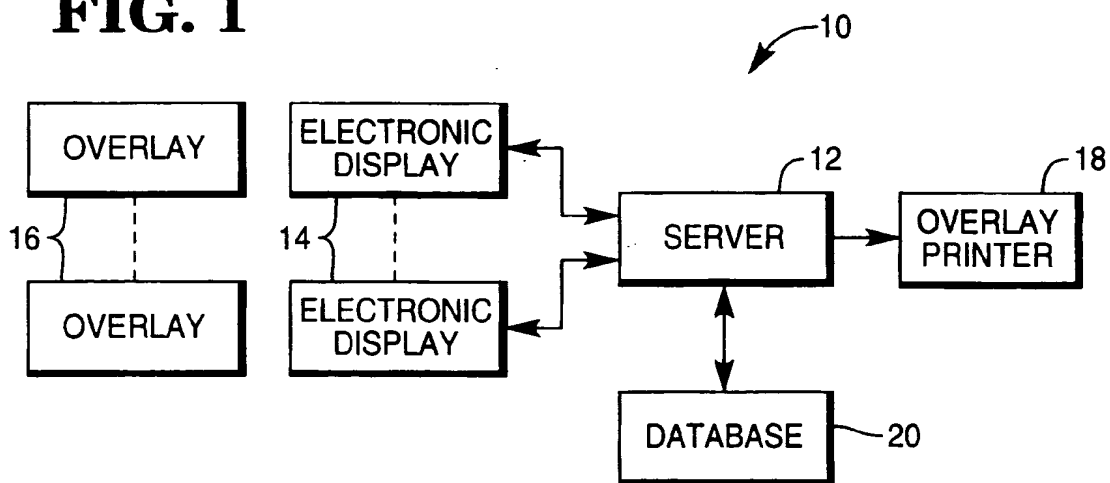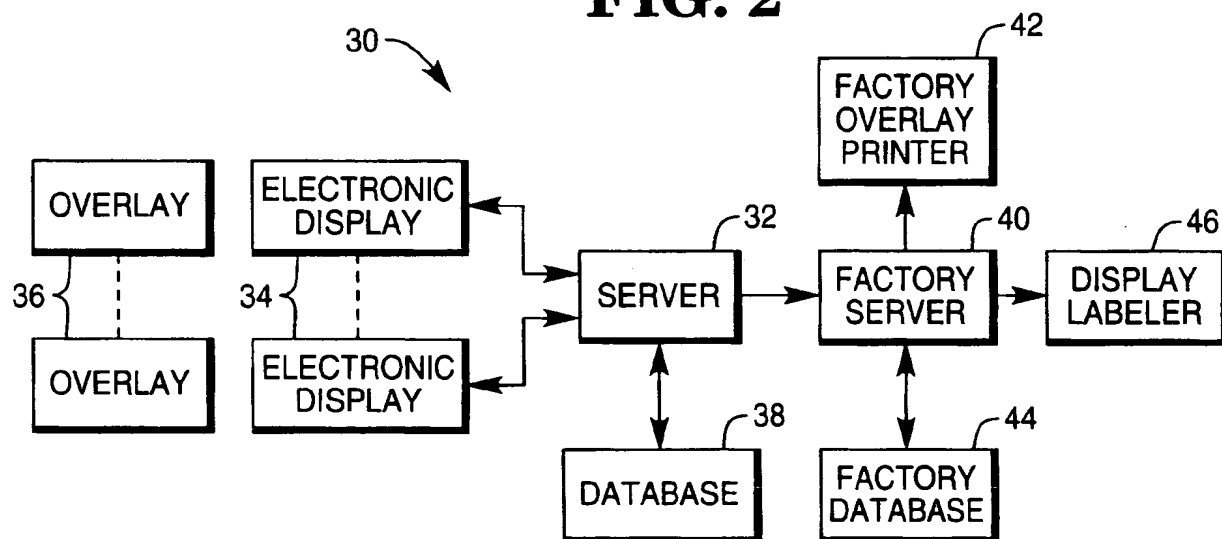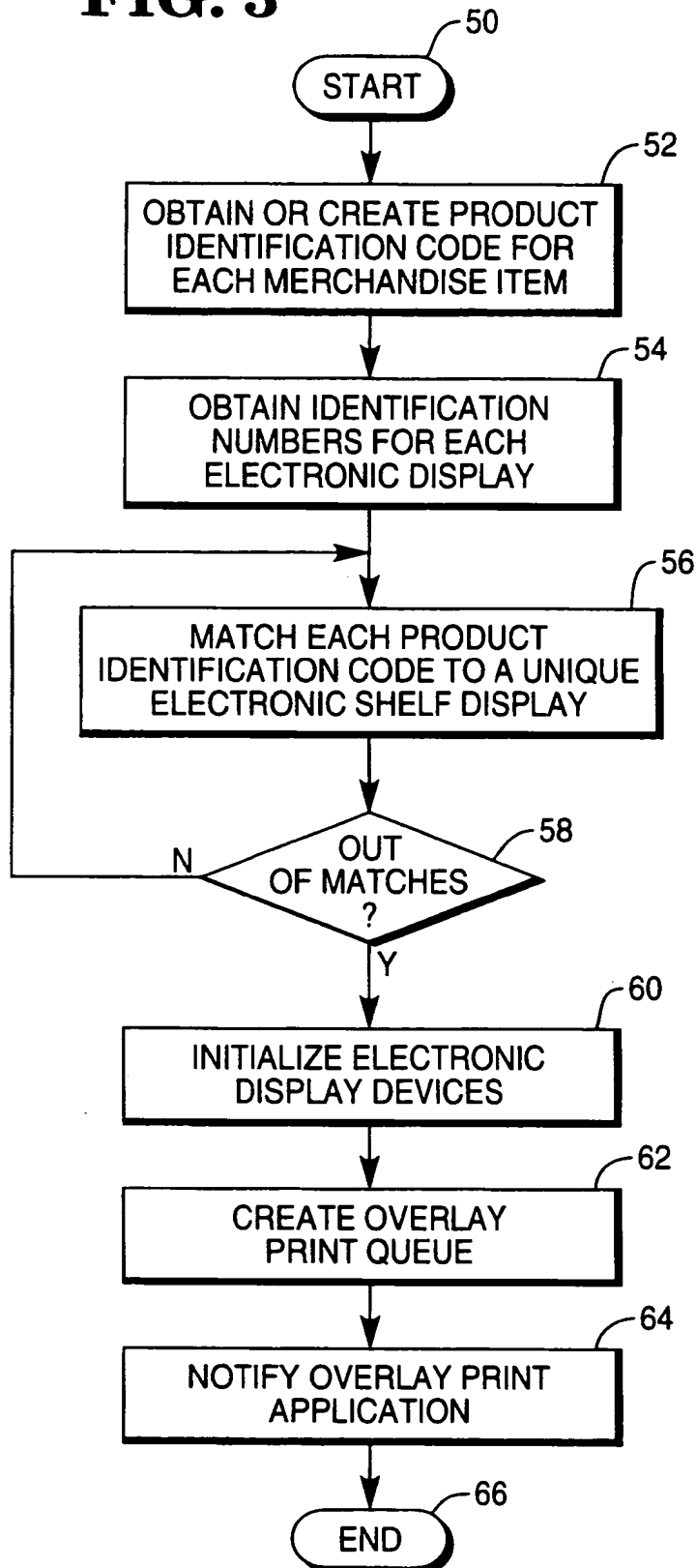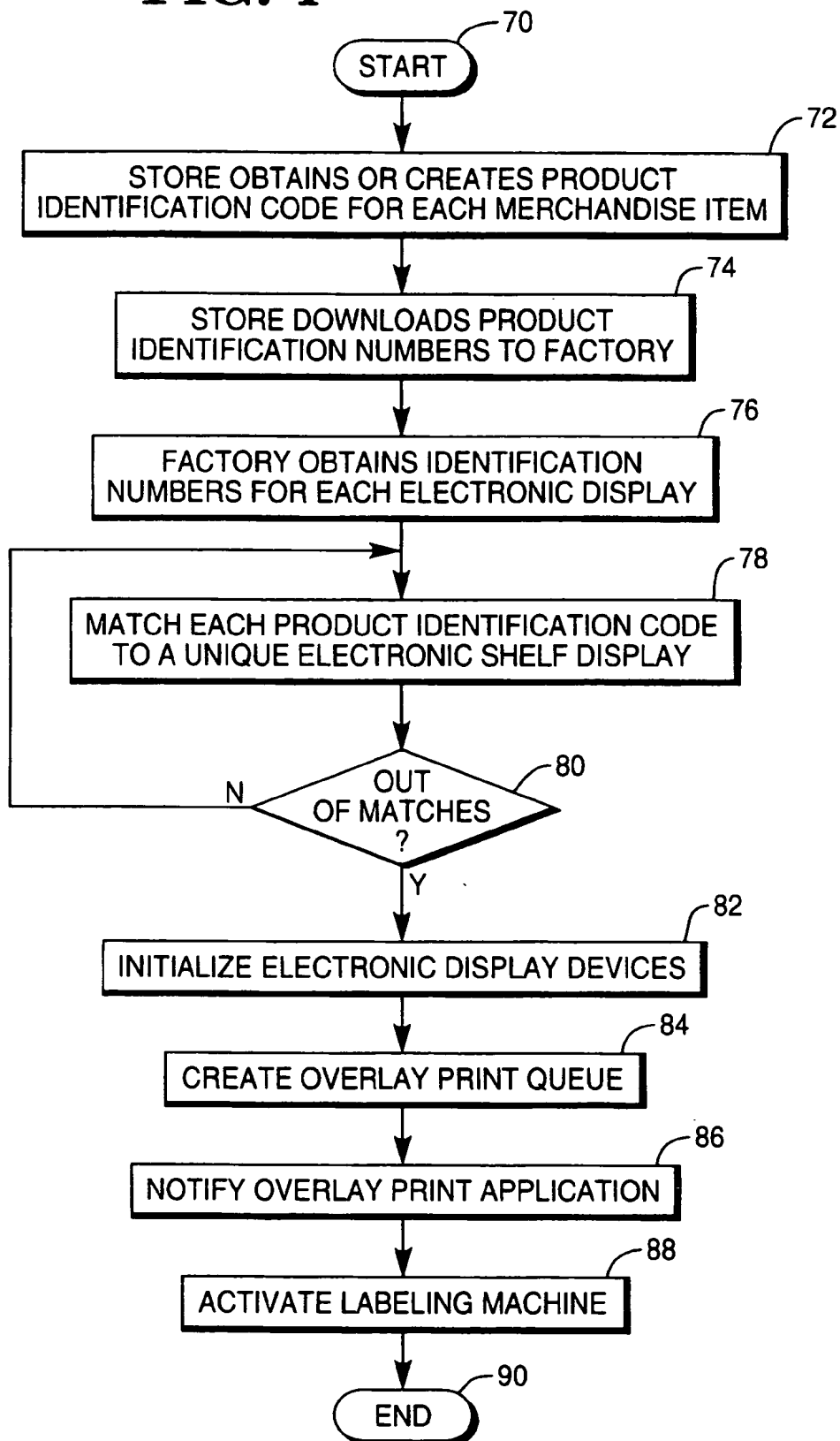   tion.

FIG. 1

FIG. 2

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FIG. 3

START — 50

OBTAIN OR CREATE PRODUCT
IDENTIFICATION CODE FOR
EACH MERCHANDISE ITEM — 52

OBTAIN IDENTIFICATION
NUMBERS FOR EACH
ELECTRONIC DISPLAY — 54

MATCH EACH PRODUCT
IDENTIFICATION CODE TO A UNIQUE
ELECTRONIC SHELF DISPLAY — 56

N — OUT
OF MATCHES
? — 58
Y

INITIALIZE ELECTRONIC
DISPLAY DEVICES — 60

CREATE OVERLAY
PRINT QUEUE — 62

NOTIFY OVERLAY PRINT
APPLICATION — 64

END — 66

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FIG. 4

START ⌐70

STORE OBTAINS OR CREATES PRODUCT
IDENTIFICATION CODE FOR EACH MERCHANDISE ITEM ⌐72

STORE DOWNLOADS PRODUCT
IDENTIFICATION NUMBERS TO FACTORY ⌐74

FACTORY OBTAINS IDENTIFICATION
NUMBERS FOR EACH ELECTRONIC DISPLAY ⌐76

MATCH EACH PRODUCT IDENTIFICATION CODE
TO A UNIQUE ELECTRONIC SHELF DISPLAY ⌐78

N ◄ OUT
OF MATCHES
? ⌐80

Y

INITIALIZE ELECTRONIC DISPLAY DEVICES ⌐82

CREATE OVERLAY PRINT QUEUE ⌐84

NOTIFY OVERLAY PRINT APPLICATION ⌐86

ACTIVATE LABELING MACHINE ⌐88

END ⌐90

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FIG. 1

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 95 30 1821

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	US-A-5 172 314 (POLAND TERRELL ET AL) 15 December 1992 * column 3, line 38-47 * * column 4, line 4-10 * * column 4, line 50-60 * * column 6, line 38-42 * * column 6, line 63 - column 7, line 2 * * figures 1,10 *	1	G06F17/60 G09F9/30 G09F3/20
X	* column 2, line 39-46 *	2	
X	* column 4, line 47-49 * * column 5, line 33 - column 6, line 32 * * figures 4-6,8 *	4-6	
Y	---	3	
Y	US-A-4 101 366 (TERAOKA KAZUHARU ET AL) 18 July 1978 * abstract; figure 3 * ---	3	
X	US-A-5 241 467 (FAILING BRUCE F ET AL) 31 August 1993 * column 4, line 33-42 * * column 5, line 21-47 * * column 6, line 67 - column 7, line 12 * * figures 3,5,6 *	1,4-6	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
A	* column 8, line 55 - column 9, line 6 * -----	2	G06F G09F B65C G06K

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	26 July 1996	Jonsson, P.O.

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